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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,949	10/30/2003	Steve Crane	7373/80860	6252
42798 7590 05/16/2008 FITCH, EVEN, TABIN & FLANNERY P. O. BOX 18415 WASHINGTON, DC 20036			EXAMINER DANIELS, MATTHEW J	
			ART UNIT 1791	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/695,949	Applicant(s) CRANE ET AL.	
	Examiner MATTHEW J. DANIELS	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-27 and 29-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-27 and 29-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 28 February 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 21-23, 26, 27, 29-32, 34, 35, 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233). **As to Claim 21**, Clarke teaches an injection head for ejecting a flowable substance (oil), comprising:

a housing (Fig. 1, item 19) including a chamber defined within at least a portion of the housing (cross section, Fig. 2), the chamber having a supply port (Fig. 2, item 21), a purge port (Fig. 2, item 23), and an outlet (Fig. 2, item 22) spaced along the housing in a longitudinal direction (Fig. 2);

an actuator (Fig. 2, items 43, C, 35, 33, 34, 31, 32, 28, 29, 30); and

an injection spindle slidably retained within the chamber between an ejection position and a deployed position (Fig. 2, item 37); and

wherein the injection spindle has a diameter smaller than that of the chamber (Fig. 2, item 37) and is provided with respective larger diameter portions adjacent its two ends (Fig. 2, items 38, 39), with the larger diameter portions forming respective seals with walls of the chamber to enclose a space between the two larger diameter portions (Fig. 2); wherein a plug for blocking the outlet is disposed within the chamber at an end of the spindle opposite that connected to the actuator (Fig. 2, item 39); and

wherein in said injection position, the two larger diameter portions of the spindle are positioned to connect the supply port with the outlet and seal off the purge port from both the supply port and the outlet (2:16, "the port 27 is closed"); and

wherein in said employed position, the two larger diameter portions are positioned to connect the purge and supply ports and to cause the plug to block the outlet (as shown Fig. 2).

Clarke does not specifically teach (a) the actuator is "connected" to the housing, or (b) that the injection spindle is connected to the actuator, or (c) that the injection port is located such that when the spindle retracts from the deployed position the plug remains in communication with the injection port to block the injection port.

However, Hynes teaches an actuator (item 39, Fig. 3) which is (a) connected to the housing (see screw, item 44, Fig. 3) and (b) connected to the spindle (Fig. 3, item 35). With respect to (c), Hynes teaches that the outlet can be located at the bottom of the tubular chamber such that linear actuation of the spindle will cause a stopper move within the outlet thereby opening and closing of the bypass. One of ordinary skill in the art would have recognized that

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the outlet of Clarke could be repositioned in the same manner to provide an exit at the bottom of the device (replacing item 41 of Clarke) instead of the side of the tubular chamber in order to provide an outlet similar to that shown by Hynes. Doing so would provide an injection spindle which blocks the injection port during a portion of its retraction. The claimed structures already appear to be present in the Clarke device.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the actuator of Hynes into that of Clarke because (a) Clarke suggests that control means should be provided to move the valve spindle (Fig. 2, item 37), and the solenoid of Hynes is a known and conventional control means, (b) the actuator of Hynes would electrically regulate flow, which would be desirable in the device of Clarke to provide improved flow control, and (c) the solenoid of Hynes is a known actuator which one of ordinary skill could have substituted for the actuator of Clarke merely by removing the actuator of Clarke and attaching the actuator of Hynes on the end to provide the predictable result that the flow to either the purge or outlet would be electrically controlled, rather than hydraulically or pneumatically.

As to Claims 22-23, Hynes teaches that fasteners, including a threaded collar (30) are known.

As to Claim 26, the combination of Clarke with Hynes provides the claimed configuration wherein the solenoid of Hynes is provided on the right side of Clarke's Fig. 2, and wherein the solenoid is disposed opposite the outlet, and the purge port is disposed between the supply port and the solenoid (23 operates as a purge port, 21 operates as a supply port). **As to Claim 27**, the supply port is disposed between the purge port and the outlet (22 operates as outlet). **As to Claims 29-32, 34, and 35**, it is submitted that Clarke's plug (39) is removable and releasably retained within the chamber and disposed at the end of the injection spindle when the injection

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spindle is in the ejection position (Fig. 2). Additionally, it is generally found to be prima facie obvious to make parts separable (or removable). See MPEP 2144.04(V)(C). In doing so, it would have been prima facie obvious to provide a complementary shaping between the spindle and the plug. In the method of Clarke, the plug is a disk shaped object which seals the outlet of the chamber (Fig. 2, items 39, 26, 22). In the alternative, Hynes provides a plug that is removable, and releasable, the spindle has an end shaped to complement the plug, it is slidably retained within the chamber and positioned at the outlet in the deployed position (Fig. 3). It further seals the outlet of the chamber. **As to Claim 39**, in one configuration (not shown in Fig. 2) Clarke teaches that the larger portions of the spindle are disposed between the supply port and the solenoid and wherein one of the portions is between the supply and outlet and the other is between the purge port and solenoid when in its alternate position, whereby communication takes place between ports via the enclosed space between the larger portions of the spindle (Fig. 2). **As to Claim 40**, Hynes teaches that the outlet can be located at the bottom of the tubular chamber such that linear actuation of the spindle will cause a stopper move within the outlet thereby opening and closing of the bypass. One of ordinary skill in the art would have recognized that the outlet of Clarke could be repositioned in the same manner to provide an exit at the bottom of the device (replacing item 41 of Clarke) to provide an outlet similar to that shown by Hynes. Doing so would provide an injection spindle which blocks the injection port during a portion of its retraction, and the claimed structures already appear to be present in the structure of the Clarke device.

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3. **Claims 22-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), and further in view of Gaubatz (USPN 2806075). Clarke and Hynes teach the subject matter of Claim 21 above under 35 USC 103(a).

As to Claims 22-24, Clarke is silent to the claimed fastener which includes a threaded collar and a locking groove and flange. However, Clarke clearly suggests that there should be a connection made with the outlet (Fig. 1, item 49). Gaubatz teaches that thermocouples are desirably provided with fasteners at their distal end, the fastener including both a threaded collar (Fig. 2, item 24) and locking groove and flange (Fig. 2, item 111). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the fasteners of Gaubatz into the apparatus of Pinney because (a) it would require only one nut, which would increase the speed of assembly or disassembly, and (b) the only difference between the claimed invention and the prior art is the use of a particular connector. However, Gaubatz teaches that the claimed connector is known, and one of ordinary skill could have substituted the Gaubatz connection for that of Clarke to provide the predictable benefit that a connection could be made by threads, instead of by welding.

4. **Claims 25 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), and further in view of Eberhart (USPN 3695149). Clarke and Hynes teach the subject matter of Claim 21 above under 35 USC 103(a).

As to Claims 25 and 37, Clarke teaches that a tube is present between the wall of the chamber and the spindle and is provided with respective openings to correspond to the supply and purge ports (Fig. 2, item 25-27, 40). Clarke, however, is silent to a "low friction" material. However,

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Eberhart teaches that for reciprocating members operating under adverse conditions (Abstract), it is known to provide a coating, which is also interpreted to be a tube, of low friction material to the inside surface of a chamber (Fig. 2, item 30) or to the surface of the ram or spindle (Fig. 1, items 20, 22, 26, 44). Additionally, Eberhart teaches sleeve bushing (Fig. 3, item 36), which is also interpreted to be a tube of low friction material. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Eberhart into that of Clarke (a) in view of Clarke's teaching to use a tube (40) and (b) in order to reduce the friction between the sliding surfaces, which would provide increased lifetime.

5. **Claim 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), and further in view of Barber (USPN 3015227). Clarke and Hynes teach the subject matter of Claim 29 above under 35 USC 103(a). **As to Claim 33**, Clarke and Hynes are silent to the sphere. However, spherical sealing elements are known from Barber, who teaches a sealing element in the shape of a sphere (Fig. 2, item 27) regulating flow between three ports (items 23, 32, 26). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Barber, namely the spherical plug, into the apparatus of Clarke because Barber teaches that plugs are used interchangeably with spherical plugs (Fig. 2, item 27), and the spherical plug would provide a better seating action than plug of Clarke. One of ordinary skill could have substituted the plug of Barber for that of Clarke simply by relocating the outlet to the bottom of the chamber and replacing item 39 with a sphere. The result would have been predictable, namely that a spherical plug would fit with the outlet, eliminating flow.

6. **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), Eberhart (USPN 3695149), and further in view of Stoss (USPN 4741364). Clarke, Hynes, and Eberhart teach the subject matter of Claim 25 above under 35 USC 103(a). **As to Claim 36**, Clarke is silent to the edge at the outlet with a seal retained in the engaging formation. However, Stoss teaches the tube including an edge at an outlet with an engaging formation and a seal retained within the engaging formation (Fig. 1, see o-ring below item 42 in the lower left of the chamber). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the o-rings of Stoss into the apparatus of Clarke because the seal of Stoss is a substitutable sealing mechanism that one of ordinary skill in the art could have incorporated by machining a ring into the tube of Clarke and placing a seal within the groove in order to provide the predictable result that the tube would seal more thoroughly.

7. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Alanko (USPN 5665301) in view of Brew (USPN 5187001) and Hynes (USPN 1245233). **As to Claim 38**, Alanko teaches the base mold (Fig. 1, item 1), soft tool formed as a sheet having an outer edge (Fig. 1, item 3), a seal formed at the outer edge (Fig. 1, items 6, 7) and connected in sealing arrangement with a base mold to form a closed mold (Fig. 2), a vacuum channel formed at the outer edge of the sheet and spaced inwardly of the seal (Fig. 1, item 8, 10), and at least one injection port disposed in the sheet (Fig. 1, item 9).

Alanko is silent to the claimed injection head. However, Brew teaches an injection head which would be releasably connected to the injection port (Fig. 3) for injecting a flowable substance having a housing with a chamber, a supply port (54), an outlet (55), an actuator (60), and a spindle slidably retained within the chamber between an ejection and deployed position (Figs. 3 and 4), and a plug (end of 64) disposed within the chamber at an end of the spindle opposite the actuator wherein when the injection spindle is in the deployed position, the plug blocks the injection port (Fig. 4) such that when the injection head is removed, the plug remains in communication with the injection port to block the injection port (anytime the plug is retracted but stays within item 73). Hynes teaches an actuator (item 39, Fig. 3) connected to the housing (see screw, item 44, Fig. 3).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the methods of Brew and Hynes into that of Alanko because Alanko suggests that some injection means is required for use with the mold, and Brew provides an apparatus specifically designed for that purpose. In the device of Brew, many actuators and connectors would have been substitutable and obvious to the ordinary artisan, including the particular actuator disclosed by Hynes.

Response to Arguments

8. Applicant's arguments filed 28 February 2008 have been fully considered, and are persuasive in part. The rejection of Claim 38 set forth previously has been withdrawn in view of

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the amended claims and the remarks on pages 8-9 of the response. See the new rejection above.

Other arguments were made on the following grounds:

- a) The claims now recite a particular configuration where the plug remains in communication with the injection port and blocks it. Clarke does not disclose having a piston head remaining engaged with one of the supply ports to continue blocking the port after the piston moves to a different position.
- b) Like Clark, Hynes fails to disclose a portion of the valve remaining seated in the valve seat when the solenoid moves the valve stem.
- c) The device of Hynes would no longer be able to redirect steam to control temperature and the device of Clake would no longer be able to redirect oil to maintain oil pressure, and therefore there is no reason to provide further manipulation.

9. These arguments are not persuasive or are moot for the following reasons:

a-c) It is axiomatic that apparatus claims are defined by their structural elements and limitations. Clarke provides a device substantially similar to the claimed invention in terms of the chamber, the ports, and the spindle. However, when the device has plug (41) removed for cleaning, or prior to assembly, the apparatus appears to provide the claimed structural configuration because the hole where item 41 previously sat provides a port which could be used as an injection port. Additionally, when Hynes and Clarke are each viewed with their respective spindles facing vertically, it is apparent that both devices have an inlet arriving to the chamber from the left, and a purge or exit port at a slight upward jog to the right, with a spindle that divers flow from the inlet to one of the exit or purge ports. The difference between the two is that Clarke provides an

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exit port also on the right, while Hynes provides an exit port pointed downwardly. However, from these references one would infer and recognize that the port of Clarke could be moved and that the material would exit axially through port 41 in a manner similar to that of Hynes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew J. Daniels/
Primary Examiner, Art Unit 1791
5/12/08